

CLAIMS

I claim:

1. A system comprising:

a plurality of devices that are distributed within an environment, a location of one or

5 more devices of the plurality of devices affecting a performance of the system,

a location determinator that is configured to determine the location of the one or more devices, based on feedback from the plurality of devices, and

an evaluator that is configured to determine an adjustment to the system to improve the performance of the system based on the location of the one or more devices.

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2. The system of claim 1, wherein

at least two devices of the plurality of devices are configured to detect an emanation from a select device of the plurality of devices, and to communicate parameters associated with the detected emanation to the location determinator, and

the location determinator is configured to determine the location of the select device based on the parameters of the detected emanation.

15 3. The system of claim 2, wherein

the select device includes a loudspeaker, and

20 the at least two devices include microphones that are configured to detect an audio signal from the loudspeaker.

4. The system of claim 2, wherein

the select device includes a radio-frequency transmitter, and

25 the at least two devices include radio-frequency receivers that are configured to detect a radio-frequency signal from the transmitter.

5. The system of claim 2, wherein

the parameters associated with the detected emanation include at least one of:

- a time of arrival of the detected emanation,
- an amplitude of the detected emanation,
- 5 a phase of the detected emanation, and
- a frequency characteristic of the detected emanation.

6. The system of claim 1, wherein

each device of at least a subset of the plurality of devices include:

- 10 an emanator that provides an emanated signal, and

15 a detector that detects emanated signals from other devices of the plurality of

devices, and communicates one or more parameters associated with the emanated signals from
the other devices to the location determinator, and

20 the location determinator is configured to determine the location of the other devices
based on the parameters of the detected emanated signals.

7. The system of claim 6, wherein

each device of the subset of the plurality of devices includes a loudspeaker and a
microphone for emanation and detection of audio signals.

8. The system of claim 7, wherein

25 the adjustment of the system includes at least one of:

a reconfiguration of channel assignment to one or more of the devices of the
plurality of devices,

20 a recommended relocation of one or more of the devices of the plurality of
devices, and

an adjustment of at least one of: a gain, a phase, a channel assignment, and a
delay associated with one or more channels associated with the plurality of devices.

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9. The system of claim 6, wherein

each device of the subset of the plurality of devices includes a transmitter and a receiver for emanation and detection of radio-frequency signals.

5 10. The system of claim 1, wherein

the adjustment of the system includes at least one of:

a reconfiguration of communication paths to one or more of the devices,

a relocation of one or more of the devices, and

an adjustment of at least one of: a gain parameter, a delay parameter, a channel

10 assignment, and a phase parameter associated with one or more of the devices.

USPTO Patent Application

11. A controller for an audio system comprising:

a location determinator that is configured to determine a location of each loudspeaker of a plurality of loudspeakers, and

an evaluator that is configured to determine an adjustment to the audio system, based on

5 the location of each loudspeaker.

12. The controller of claim 11, wherein

each of at least two loudspeakers of the plurality of loudspeakers include a microphone that is configured to detect emanations from the plurality of loudspeakers, to facilitate the
10 determination of the location of each loudspeaker by the location determinator.

13. The controller of claim 11, wherein

each of at least two loudspeakers of the plurality of loudspeakers include a microphone that is configured to detect a sound from a target location in the vicinity of the plurality of
15 loudspeakers, and

the location determinator is further configured to determine the target location based on parameters associated with the detection of the sound at the at least two loudspeakers, and
the adjustment to the audio system is further based on the target location.

20 14. The controller of claim 11, wherein

each loudspeaker of the plurality of loudspeakers corresponds to a channel of a plurality of channels of the audio system, and

the adjustment to the audio system includes at least one of:

a reconfiguration of correspondence between the plurality of loudspeakers and the
25 plurality of channels,

an adjustment of at least one of: a gain, a phase, a delay, and a channel allocation associated with one or more of the plurality of channels, and
a recommended relocation of one or more of the plurality of loudspeakers.

15. The controller of claim 13, wherein

each of at least two loudspeakers of the plurality of loudspeakers include a microphone that is configured to detect emanations from the plurality of loudspeakers, to facilitate the determination of the location of each loudspeaker by the location determinator.

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16. The controller of claim 11, wherein

the location determinator is further configured to effect one or more emanations from select loudspeakers, to facilitate the determination of the location of the select loudspeakers.

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17. A controller for a wireless system comprising:

a location determinator that is configured to determine a location of each base station of a plurality of base stations, based on emanations from each base station, each base station being configured to provide communications to wireless devices in a vicinity of the base station, and
5 an evaluator that is configured to determine an adjustment to the wireless system, based on the location of each base station.

18. The controller of claim 17, wherein

each of at least two base stations of the plurality of base stations include a receiver that is configured to detect transmissions from the plurality of base stations, to facilitate the determination of the location of each base station by the location determinator.
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19. The controller of claim 17, wherein

the adjustment to the wireless system includes at least one of:

an adjustment of at least one of: a gain, a phase, a delay, a frequency, and a
channel allocation associated with one or more of the plurality of base stations, and
a recommended relocation of one or more of the plurality of base stations.
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20. The controller of claim 19, wherein

each of at least two base stations of the plurality of base stations include a receiver that is configured to detect transmissions from the plurality of base stations, to facilitate the determination of the location of each base station by the location determinator.
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21. A method of adjusting a system, comprising:

determining a location of each device of a plurality of devices, based on feedback from the plurality of devices, and
adjusting the system based on the location of each device.

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22. The method of claim 21, further including

controlling each device of the plurality of devices to provide a controlled feedback from the plurality of devices.

10 23. The method of claim 21, further including

receiving the feedback from at least two devices of the plurality of devices, based on emanations from other devices of the plurality of devices.

15 24. The method of claim 21, wherein

determining the location of each device includes at least one of:

determining an arrival time of an emanation from each device at other devices of the plurality of devices,

determining a phase of an emanation from each device at other devices of the plurality of devices,

determining a frequency characteristic of an emanation from each device at other devices of the plurality of devices, and

determining an amplitude of an emanation from each device at other devices of the plurality of devices.

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25. The method of claim 21, wherein

adjusting the system includes

adjusting at least one of: a gain, a phase, a delay, and a channel assignment associated with at least one device of the plurality of devices,

5 adjusting a mapping of the plurality of devices to a plurality of channels of the
system, and

providing a recommended relocation of at least one device of the plurality of devices.

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